Indiana Defense Asset Study

September 2007

INDIANA OFFICE OF ENERGY & DEFENSE DEVELOPMENT

CENTRAL INDIANA CorporatePartnership

The Consulting Team

CENTRAL INDIANA CorporatePartnership

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TECHNOLOGY FUTURES INC.

Thomas P. Miller and Associates
Building Assets through Knowledge & Innovation

THE SPECTRUM GROUP
MEETING TOMORROW'S CHALLENGES TODAY

SIGMA STRATEGIC SOLUTIONS, LLC

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The Study

Project Goals

1. Identify Indiana's defense assets
2. Determine DoD, DHS & NASA priorities, drivers and procurement forecast
3. Target opportunities & recommend a business plan to grow Indiana's defense industry

10 Month Process

TASK ONE
Identify IN past contracting activity

TASK TWO
Identify IN technology assets

TASK THREE
Identify IN military base assets

TASK FOUR
Determine DoD, DHS & NASA priorities, drivers & forecast

TASK FIVE
Determine IN target opportunities & affinities

TASK SIX
Develop a business plan

Input Process

- Formed an advisory council
- Reviewed contract data
- Conducted interviews & an online survey and an affinity analysis
- Visited military installations
- Consulted with retired senior officials at DoD and DHS
- Held focus group meetings

ASSESSMENT & FORECAST

Indiana Assessment

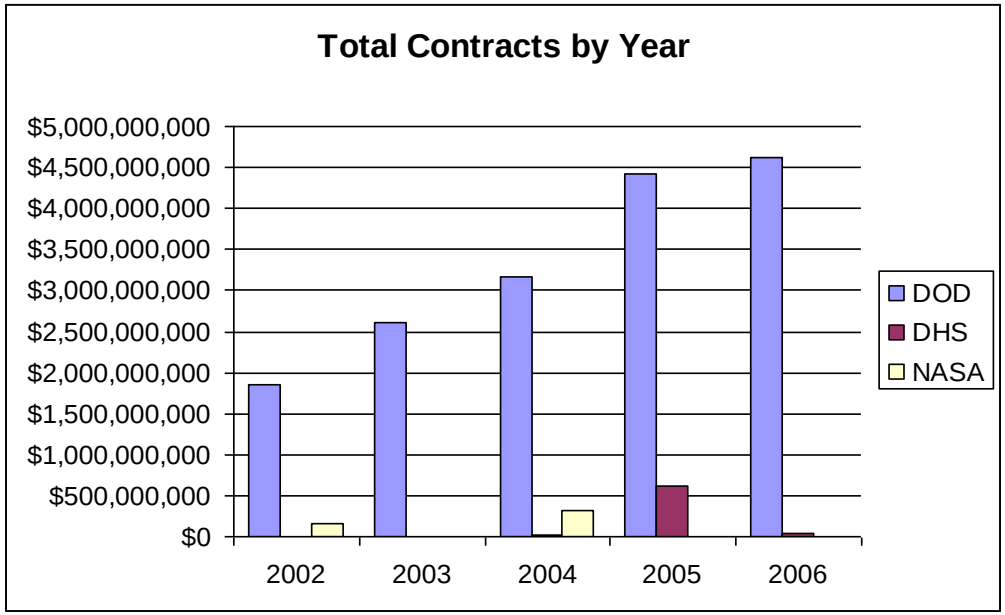
INDIANA

- IN Prime contractors contribute significantly to the state
- Large manufacturing economy
- Significant research assets & research institutions
- IN defense biz well-positioned to grow

- $6Bn+ contracts & military payroll in 2006 (24% CAGR during the war)
- IN ranks 20th in U.S. for DOD funding in 2006 (17th in FY05)
- Manufacturing is 27% of IN employment & 32% of Gross State Product
- IN's research institutions and companies have created over 48,000 patents in the past 20 years
- Indiana's universities rank 21st in the U.S. for federal R&D funding

Indiana Assessment

DoD funding dominates in Indiana



IN's Top 5 Procurement Categories are:

1. Non-Combat Vehicles
2. Electronics & Communications
3. Services
4. Aircraft Engines & Spares
5. Combat Vehicles





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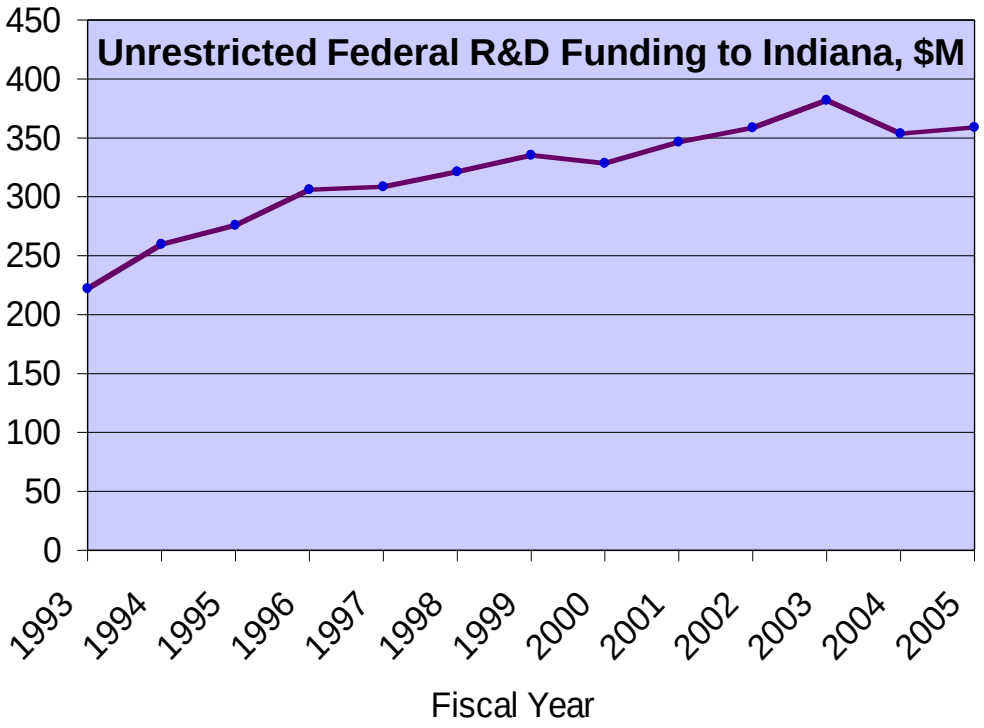
Indiana Assessment

IN ranks 21st in U.S. for Federal R&D Funding



IN's Top Technology capabilities:

- Vehicles & Tires
- Transmissions
- Pharmaceutical
- Bio-Chemical Sensors
- Computing & IT
- Data Interpretation & handling
- Measuring
- Electronics and Communications
- Environmental Protection
- Linguistics
- Engineering
- Psychological Sciences

Indiana Assessment

9 MILITARY INSTALLATIONS

CAMP ATTERBURY
Edinburgh
Satellite is Muscatatuck Center for Complex Ops
Atterbury is also 1 of 6 Power Projection Platforms

CRANE DIVISION, NAVAL SURFACE WARFARE CENTER
Crane
Over 3,000 Indiana employees

DEFENSE FINANCE AND ACCOUNTING SERVICE
Indianapolis
Gained personnel during BRAC

FORT WAYNE INTERNATIONAL AIRPORT AIR GUARD STATION
Fort Wayne
Gained assets during BRAC

GRISSOM JOINT AIR RESERVE BASE
Kokomo
700 civilians employed, 1100 reservists

HULMAN FIELD AIR NATIONAL GUARD
Terre Haute
275 personnel, property leased from International Airport

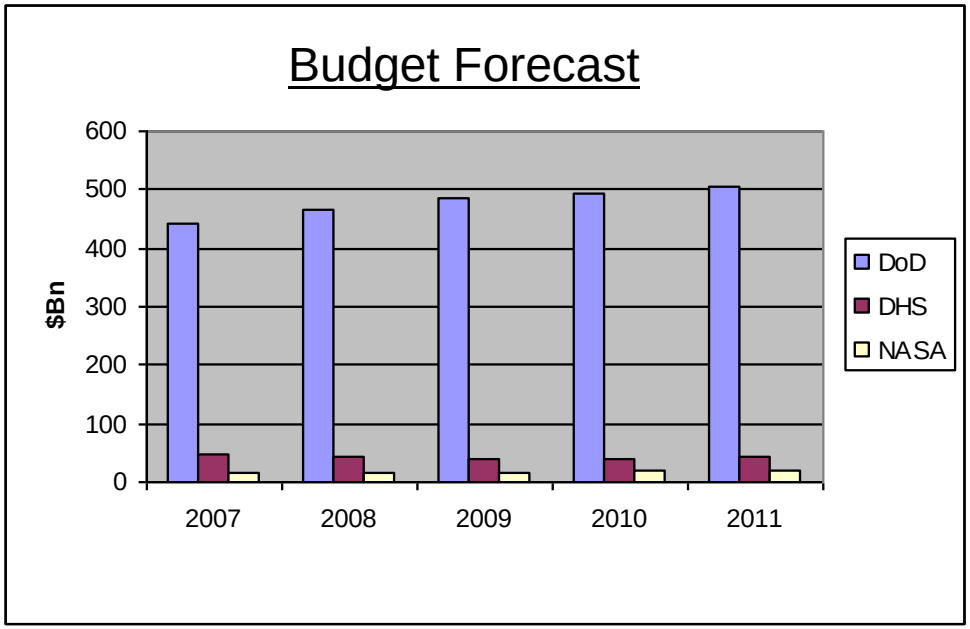
INDIANA ARMY AMMUNITION PLANT
Charlestown
Closed in 1995 BRAC, being cleaned up and converted to Industrial Park.

JEFFERSON PROVING GROUND
Madison
Closed in 1995 BRAC, now partially leased to Indiana National Guard for air-to-ground training

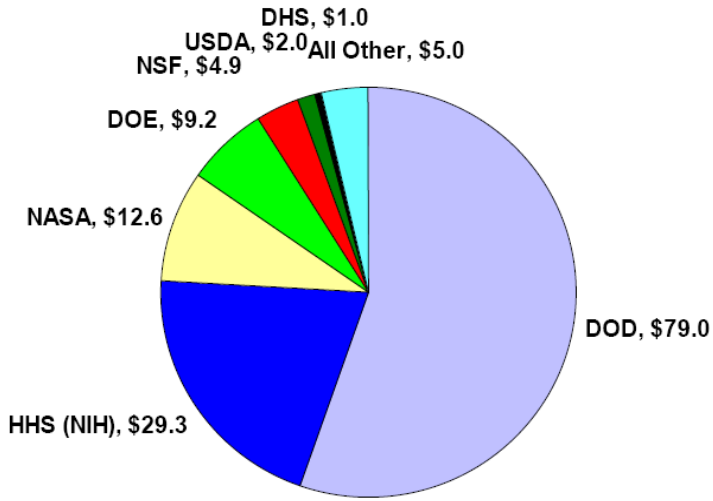
NEWPORT CHEMICAL DEPOT
Newport
Set to close after disposal of VX nerve agent

Federal Forecast

DoD Funding dominates Budgets and R&D Forecasts



R&D Budget, $Bn (2008)



DOD, DHS & NASA Forecast Drivers

DOD

- The "Axis of Evil": North Korea and Iran
- Developments in the Southern Hemisphere
- WMD Proliferation
- The Global War on Terror
- Military Support for Civilian Authority
- DOD's Role and Mission in Homeland Defense
- China emerging as a Peer Competitor

DHS

- Immigration and Border Security
- Coast Guard DEEPWATER Program
- Port Security
- Identification
- Public Health Emergencies
- All Hazards Federal Response
- Increased use of Grants

NASA

- The President's Vision for Space Exploration
- Potential for a "Space Race" with China

RECOMMENDATIONS

Recommendations

- Focus Targets of Opportunity
- Connectivity and Collaboration
- Marketing, Image and Advocacy
- Small Business Support Services
- Human Capital
- University Cooperation
- Funding

Targets of Opportunity

1. Center for Complex Operations
2. Transportation Systems
3. Test Services/Support
4. Future Energy Alternatives
5. Bio Collaboration
6. Defense Electronics
7. Advanced Military Informatics

Focus Target 1 : Center for Complex Operations (e.g. Urban Ops)

What:

- **A DoD Opportunity in Indiana as big as Crane**
- **Fully leveraged MUTC mission across southern Indiana**
- **Include students/citizens to augment the simulations who have language and cultural training appropriate to the simulated city**
- **Supply state produced military products to try in these simulations**
- **Operate a commercial side clearinghouse for technology providers who would want to be directly tested in these simulations**

Potential Opportunities:

- Create a commercial, containable test bed
- Particularly well-suited for network-centric communications systems on future weapon systems
- Extension of the Indiana fiber optic network to support multiple, high definition feeds of the simulated city for participants and evaluators
- "Analyst of the Future," translators training for DOD, CIA, and DHS

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Focus Target 2 : Transportation Systems

What it is:

- Land vehicles, particularly, the "Next Generation Light Land Vehicle"
- Airplanes, particularly the Lightweight Jet (INSATS)
- Subsystems for vehicles

How It's Used (Examples):

- Next Generation
- Small, high speed
- Fuel efficiency
- Low environmental impact
- Ruggedness
- Low maintenance requirements
- Where needed, armor protection

Indiana Assets (Examples):

- AM General
- Delphi, Remy
- Rolls Royce, Cummins
- Honeywell Aircraft Landing System
- Metadyne
- Purdue

Potential Opportunities:

- Next generation diesel-electric hybrid
- Next generation lightweight combat vehicle
- Next generation lightweight jet
- Autonomous flight software platform

Focus Target 3: Defense Electronics

What it is:

- **Electronic products and systems to assist military, homeland security, and aerospace operations**

How It's Used (Examples):

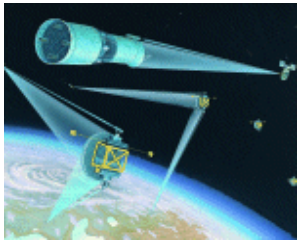
- **Voice/data/video communication networks**
  - **Sensor networks**
  - **Radar, RF, batteries**
  - **Electronic Warfare**
  - **Millimeter waves, Free Space Optics, Ultraviolet**
  - **Command/Control**

Indiana Assets (Examples):

- IU: Cyclotron Program
- Purdue: Center for Adv Manufacturing
- Crane
- SAIC, EG&G
- IT&T
- Raytheon
- Omega Wireless

Potential Opportunities:

- Millimeter wave/ Free Space Optics/ Ultraviolet communication test bed
- Electronic Warfare test range for commercial use



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Focus Target 4: Services & Support

What it is:

- **The provision of products and services for enhancing the usefulness and extending the life of current military and homeland security systems**

How It's Used (Examples):

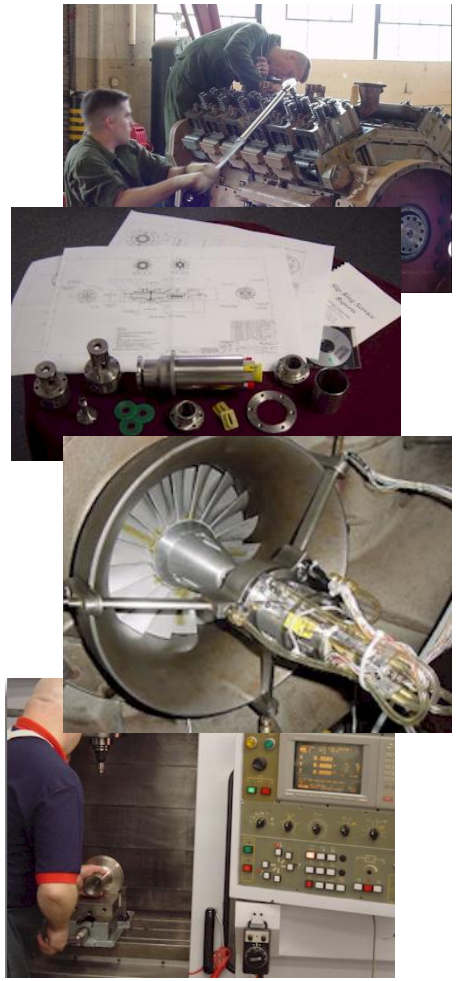
- **End of life replacement parts,**
- **Ultra-machined retrofits & parts**
- **Composites**
- **New functions in existing packaging**
- **Tradecraft transfer to field units**

Indiana Assets (Examples):

- Purdue, Notre Dame, and IU
- Crane
- Rolls-Royce, Raytheon, ITT, Northrup Grumman, SAIC
- Aerodyn Engineering
- HUPP & Associates
- Smiths Aerospace

Potential Opportunities:

- Next Gen Field Repair
- "MASH" for repair of critical mission components
- Clearinghouse for placing out-of-production parts orders
- "Hard tactical problems" ultra-precision machining center



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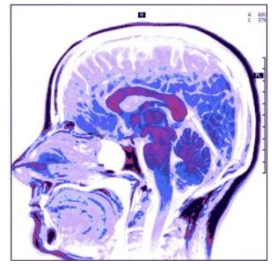
Focus Target 5: Bio Collaboration

What it is:

- **The application of IN life sciences assets to DOD and DHS needs**
  - **Sensing chemical, biological, and radiation agents**
  - **Human sensors**
  - **Health data management**
  - **Outcomes management**
  - **Ortho**

How It's Used (Examples):

- **Agricultural Infrastructure Protection and at Ports**
- **Bio Shield**
- **Rehabilitating and returning the war fighter to battle**
- **Rehabilitation**



Indiana Assets (Examples):

- IU, Purdue, Notre Dame, Ivy Tech
- Eli Lilly
- Roche
- Zimmer, Biomet
- Griffin Analytical Technologies
- Andara Life Sciences
- BIOVITESSE

Potential Opportunities:

- Army $25M RFP for Head Trauma Research Center
- Mass spectroscopy reference spec & data base
- CBRNE sensors
- genetic model to map haplotypes to biotech treatments
- Create test fields to verify solutions for agricultural infrastructure protection

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Focus Target 6: Advanced Military Informatics

What it is:

- **Development of algorithms in R&D and products**
- **Informatics in systems and devices**
- **Informatics in computer processing**
- **Information Security**
- **Includes cyber-infrastructure tools, visualization, and complex systems**

How It's Used (Examples):

- **First responder, border policing, criminal activities autonomous flight**
- **Data mining, combinatorial math, topology, pattern recognition, information encoding and simulation/modeling**
- **Allied to Computational Linguistics, Control Theory, Information Sciences, and Complex Systems Theory**
- **Data security**

Examples-- Indiana Assets:

- IU Informatics School
- Purdue - CERIAS
- Notre Dame
- Statewide Urban Operations Test Bed
- Arxan Technologies
- InfoComm
- MNB Technologies
- Rolls-Royce

Potential Opportunities:

- Combine informatics with learning computers to solve Intelligence challenges, such as:
  - High speed language translation
  - Capturing a scene as a series of high level visual objects for later retrieval
  - Real time data capture, logging, and dissemination
- Create an Indiana Grid service for prototyping applications

Focus Target 7: Future Energy Alternatives

What it is:

- The development of new ways to provide power, energy and fuels

How It's Used (Examples):

- Coal, bio matter (ethanol and bio-diesel), nuclear fusion/fission, solar, and wind
- Storage: New Materials Batteries, Fuel cells, and Ultra Capacitors
- Peak power technology to make existing mass power generation plants more efficient
- Portable Power

Indiana Assets (Examples):

- Coal, soy diesel, ethanol
- IU, Purdue, Notre Dame
- Crane
- Rolls Royce (mini turbines)
- iPower Energy Systems
- Remy (batteries)
- SAIC
- Peabody/Rentech
- Dwyer Instruments

Potential Opportunities:

- COE @ Crane
- USAF Synfuel Demo @ Terre Haute
- Batteries
- Hybrid electric vehicles, transmissions
- Biofuels

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Recommendations

- Focus Targets of Opportunity
- Connectivity and Collaboration
- Marketing, Image and Advocacy
- Small Business Support Services
- Human Capital
- University Cooperation
- Funding

Connectivity and Collaboration

- Support Tri-directional networking programs:
  - DC-to-IN
  - IN-to-DC
  - IN-to-IN
- Build “communities of interest” in target areas
- Strengthen & consolidate IN DOD industry associations

Marketing, Image & Advocacy

- Establish a merit-based, bi-partisan congressional appropriations targeting process
- Stronger State advocacy
- Strengthen lobbying capacity
- Market Indiana as an internationally known center of DOD and DHS testing and training
- Develop and implement IN branding initiative

Small Business Support Services

- Broaden PTAC
- Synchronize SBDC, SBIR, OED and Crane small business advocacy programs
- Ensure sustainable, ongoing technical assistance program for small biz
- Make Crane the doorway to MUTC training and testing opportunity, customers, IN technology
- Educate small biz on ‘how to’ federal contract

Human Capital

- Strengthen uniform, statewide Systems Engineering Technician or "21st Century manufacturing" programs
- Reinforce regional campus missions in manpower preparation
- Communicate need for systems engineering degrees, complex systems focus
- Tie Brac-affected personnel to opportunities

University Cooperation

- Establish a statewide university skills database and portal for customers, sponsors, planners
- Encourage and communicate common tech transfer practices
- Fully leverage IU linguistics, cultural strength, including role at MUTC
- Establish secure R&D center for DOD projects

Funding

- Ensure that state technology funding continues to support the defense industry
- Aggressively pursue federal and other types of funding opportunities to support the defense industry

Key to Success : Evolutionary vs. Revolutionary Plan

- Defense business plan builds upon current Administration Econ Dev Initiatives
  - Accelerating Indiana (IEDC)
  - Energy Plan (OED)
  - Advanced Manufacturing (CONEXUS)
  - Transportation, Distribution & Logistics (CONEXUS)
  - Bio-Crossroads (CICP)

Key to Success

This effort will require:

1. Collaboration
2. Marketing & Advocacy
3. Investment in Human Capital & Small Biz Support Services
4. University participation
5. Immediate action on the 7 focus targets of opportunity
6. Funding

Leadership and Partnership

- Establish a Public Private Partnership (P3) that leverages Indiana's defense assets and implements the defense development plan
  - Provides state-wide reach and weight to local, regional & installation specific organizations
  - Aggressively pursues key enablers to optimize MUTC Opportunity
  - Works with Conexus Indiana and IEDC to support the focus action teams and other businesses pursuing DoD procurement & R&D opportunities
  - Markets Indiana companies & capabilities to the Pentagon
  - Establishes public/private agreements for commercials use of state/federal assets & vice-versa

CRANE STUDY

Crane Naval Warfare Center

In October 2006, due to a loss of jobs at Naval Support Activity Crane during the most recent BRAC process, the **U.S Office of Economic Adjustment / OSD** and **U.S. DOL** funded an economic diversification planning strategy that would lesson the dependence of economy of a six-county region upon the U. S. Navy's third largest base.

Crane Naval Warfare Center

Top 5 Regional & Statewide Priority Projects

- Create a Tech Center in the Region
- Develop support programs for tech-driven sectors such as Batteries & Fuel Cells.
- Assist established government contractors to expand their non-defense operations.
- Develop new opportunities for Life Sciences business
- Support regional development of non-defense Manufacturing clusters

Crane Naval Warfare Center

Next Steps

- To develop the Tech Center to serve Indiana businesses
- To assist government contractors across Indiana in expanding
- To pursue technology-driven development in sectors such as battery & fuel cells
- To recruit small arms manufacturing operations
- To open the Crane Learning & Employment Center for Veterans with Disabilities
- To develop a partnership between Indiana life sciences stakeholders and the National Institutes of Health
- To explore a joint grant application to DARPA from CTI and other Indiana partners

Economic Impact of Success

A one percent increase in the market share of federal procurement from the DOD in FY 2006 alone would have represented an increase of $2.57 billion for Indiana.

For More Information…

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www.in.gov/energy/defense/index.html